



## WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** 2006CT123B

**Title:** Development and evaluation of a multi-dimensional spatially and temporally dynamic mesohabitat classification model for stream management and water flow allocation planning in southern New England streams

**Project Type::** Research

**Start Date:** 05/01/2006

**End Date:** 05/01/2007

**Congressional District:** 2

**Focus Category:** Ecology, Geomorphological Processes, Hydrology

**Keywords:** mesohabitat, stream classification, water allocation planning

**Principal Investigators:** Vokoun, Jason; Daniels, Melinda Dawn

**Federal Funds:** \$24,546

**Non-Federal Matching Funds:** \$49,332

**Abstract:** Connecticut needs a regionalized southern New England classification scheme for mesohabitats if it is to defensibly use mesohabitats to determine the effects of flow diversion on stream biota habitat quantity. To address this need, definitions of physically distinct mesohabitats must be created and that the stream biota must show differences in assemblage structure and composition within these mesohabitats to be a meaningful basis for decision making. A physically distinct and biologically meaningful classification of mesohabitats for southern New England would result in the improvement of mesohabitat modeling efforts underway to quantify the effect of flow diversions on habitat quantity for stream biota. Our proposed empirical research would greatly improve the capability of mesohabitat models to contribute to these important management challenges.

The proposed research is an integrated empirical field data collection and modeling study that will produce both a biologically meaningful classification of mesohabitats for southern New England streams

and a model to predict spatio-temporal changes in these mesohabitats under variable streamflow conditions. The specific objectives of this research are to: 1) Collect hydraulic characterizations of mesohabitat channel units from three streams and use statistical classification to create a scheme of physically distinct mesohabitats based on channel morphology, flow depth and Froude number, and flow variability with stage, 2) Collect macroinvertebrate and fishes (abundance, size classes, and species identity) from mesohabitats and statistically determine biological distinctness among channel units, and 3) Develop a model linking spatio-temporal changes in mesohabitat units with biological community habitat suitability.

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*[U.S. Department of the Interior](#), [U.S. Geological Survey](#)*

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